The Economic Influence of Population Growth, Fisheries, Coastal and Marine Industries, and Tourism Derived from Use of the Gulf of Mexico

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Coastal change is a major concern along the Gulf of Mexico. A visit to the Gulf's shore reveals a set of resources of incomparable natural beauty for which intense competition exists. Sport and commercial fisheries, recreational beach activities, boating, marinas, unique ecologies, productive wetlands, scenic views, urban and rural development, heavy and intense industrial use, and the amenity-based economic and social lives of our coastal communities have all combined to place the Gulf of Mexico's development and management of these resources in a fragile balance. We must find a socially acceptable way to satisfy the demand for these resources while protecting their ecological integrities.

This paper focuses on the economic use of the Gulf of Mexico's resources by pointing out some of the major economic values associated with them. Five major areas are addressed:

- Population,
- Fisheries,
- Minerals and petroleum,
- Tourism, and
- Shipping.

Specific recent studies that assess the value of Florida coastal resources when used for tourism, wetlands, recreational fishing, artificial reefs, boating and marinas, and beaches are used to illustrate the tremendous economic importance of the coastal resources surrounding the Gulf of Mexico.

Population

These coastal areas are some of the most rapidly growing and densely populated counties in the United States. The U.S. coastal population, which stood at 80 million in 1960, is estimated to grow to more than 127 million people in 2010, an increase of almost 60 percent. The coastal population in the Gulf of Mexico is projected to increase by 144 percent between 1960 and 2010. As a region, the greatest change in population occurred between 1970 and 1980, when the Gulf Coastal population increased by 33 percent.

Western Florida has been and will continue to be the most rapidly growing area in the Gulf. Its population is expected to increase by more than 1.5 million over the next two decades. Texas is the next most rapidly growing state, with an expected coastal population increase of over 1.1 million during this same period. Both western Florida and Texas

will have the highest rates of growth in the Gulf, 27 and 22 percent respectively. These and other population data for the Gulf of Mexico as a region were synthesized by the National Oceanic and Atmospheric Administration (NOAA).[1]

While the percentage change by decades in U.S. population has been on the decline from 1950 to 1960, it is still significant at 8.5 percent for 1980-88.[2] Of the five states on the Gulf of Mexico, Texas and Florida continued to experience above-average growth during that decade (Fig. 1). Alabama, Mississippi, and Louisiana were below the national percentage change. However, the domination of Texas and Florida gives the Gulf states as a whole a higher population growth rate than the other states combined. The growth rate of coastal counties in the five states was greater than the growth rate for all counties in the five states.

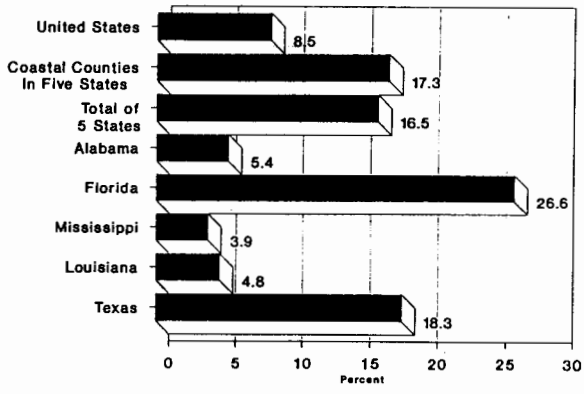

Figure 1.—Percentage change in population in the United States and five Gulf Coast states, 1980–88. Totals for Alabama, Florida, Mississippi, Louisiana, and Texas include all counties.

Of the five states, all but Louisiana are above the average of the 50 U.S. states in total population. The coastal counties of the five Gulf Coast states have grown 203 percent (Fig. 2) since 1950 compared to the growth of the overall U.S. of 64 percent. Population growth of the five Gulf states in total has been 119 percent.

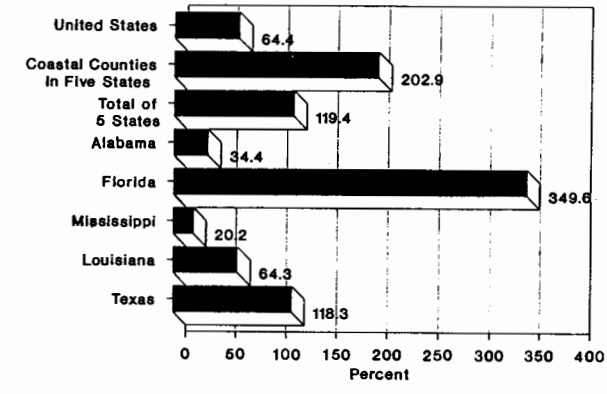

Figure 2.—Percentage change in population in the United States and five Gulf Coast states, 1950–88. Totals for Alabama, Florida, Mississippi, Louisiana, and Texas include all counties.

During the last eight years, the coastal counties of the Gulf have doubled the overall U.S. growth rate, with Florida and, to a lesser extent, Texas being the dominant influences. Percentage population changes in the coastal counties of each Gulf Coast state for 1980-88 and 1950-88 have been tabulated (Fig. 3). Note the dramatic influence of Florida on population growth along the Gulf of Mexico. Today, one-sixth of the U.S. population lives in the five Gulf Coast states, with the major source of population being the Midwest and northeastern United States.

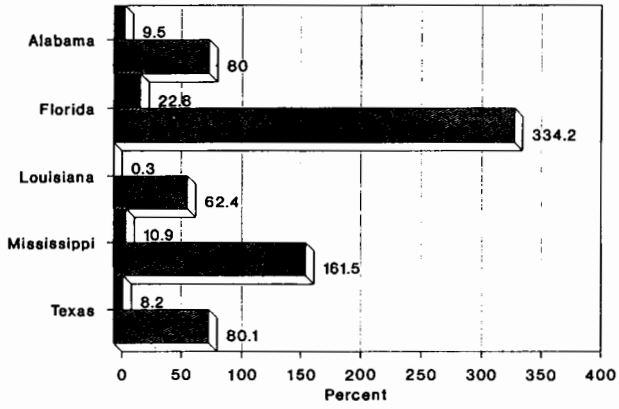

Figure 3.—Percentage change in coastal counties population in five Gulf Coast states: 1980–88 is represented by black bars and 1950–88 by gray bars.

Fisheries

Commercial

In 1988, the Gulf of Mexico produced 1.9 billion pounds of fishery products,[3] 27 percent of the U.S. total of 7.2 billion pounds (Fig. 4). Dockside value was $700 million — 20 percent of the U.S. total of $3.5 billion. Both these percentage contributions for 1988 are slightly below historical averages for the Gulf of Mexico. The Gulf shrimp industry was the second most valuable U.S. fishery in 1988 at $415 million dockside value.

Louisiana was the leading Gulf state in both poundage and value (Table 1). Ranked by volume of landings, 15 of the top 60 major fishery ports in 1988 were in the Gulf Coast states, five in the top 10, and Cameron, Louisiana, was ranked first. Ten of the 15 ports are in Louisiana, two each in Texas and Mississippi, and one in Alabama.

Twenty-one of the 60 major U.S. fishery ports according to value of landings in 1988 were in the

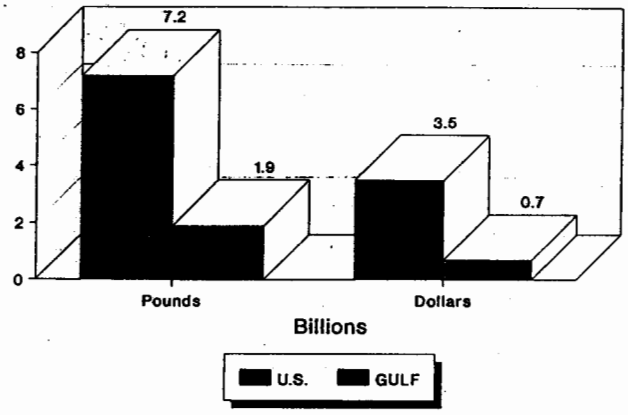

Figure 4.—Domestic landings of commercial fishery products in the United States and Gulf of Mexico, 1988.

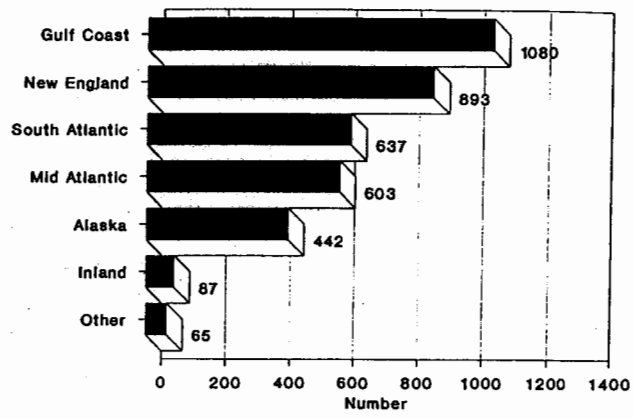

Figure 5.—Processors and wholesalers of fishery products in the United States by region, 1987.

Table 1.—Domestic landings and value of commercial seafood products in the five Gulf Coast states, 1988.

	MILLION POUNDS
Louisiana	1,356
Mississippi	336
Florida	182
Texas	96
Alabama	22
	MILLION DOLLARS
Louisiana	$317
Texas	176
Florida	170
Mississippi	61
Alabama	40

Table 2.—Fishery products processing and wholesaling employment in the five Gulf Coast states, 1987.

Mississippi	5,224
Louisiana	4,573
Florida (West Coast)	2,876
Texas	2,142
Alabama	1,956
TOTAL	16,771

Gulf Coast states. Three were in the top 10 with the Empire-Venice, Louisiana, area the highest at fifth in the United States. Ten of these ports are in Louisiana, while five are in Texas and Mississippi; Alabama and Florida each have two ports listed. Along the Gulf, a larger number of ports are in the top 60 ranked by value in contrast to volume primarily because of the much higher value per pound for the shrimp industry.

The five Gulf Coast states also contain more seafood processors and wholesalers of fishery products than any other region (Fig. 5) — 1,080 plants in 1987, representing 26 percent of the U.S. total. Gulf plants have almost 17,000 workers or 19 percent of those in fishery products processing and wholesaling nationwide. Within the region, Mississippi plants employ the most workers — 5,224 — while Alabama employs the fewest, 1,956 (Table 2). Industrial plants using menhaden for fish meal account for the large Mississippi total. These plants also provide an economic base to handle the large volume of seafood imports that enter the region, particularly through Florida, for processing each year.

For years, the Gulf of Mexico has been touted as one of the few areas of the United States' exclusive economic zone that harbors large quantities of unexploited fishery resources.[4] However, since major commercial development and use of these resources have not occurred, the sport fishing community has scrutinized future commercial exploitation because many of the unexploited stocks represent either adult fish that provide species for sport fishing or prey fish for large predator species important to the recreational angling community.

Recreational

In 1988, estimates put recreational angling expenditures in the Gulf of Mexico at $6.5 billion (Table 3) and output at $10 billion, with a resultant creation of 187,000 jobs. Florida and Texas were by far the leaders among the five states. Sixty-seven million sport fishing trips were made in 1988 from Atlantic and Gulf of Mexico states (Fig. 6). Recorded data indicate that 19.9 million, or 25 percent of the U.S. total, were from all states that border the Gulf of Mexico (Fig. 7) except for Texas, whose added predominance would clearly make the Gulf of Mexico the leading recreational fishing region in the nation.

Table 3.—The economic impact of sport fishing in the five Gulf of Mexico states, 1988.

	EXPENDITURES*	OUTPUT*	PERSON YEARS EMPLOYMENT
Texas	$1,900	$3,300	53,089
Louisiana	539	893	15,104
Mississippi	428	807	16,160
Alabama	519	804	16,754
Florida	3,100	4,200	85,584
TOTAL	$6,486	$10,004	186,691

* Million dollars
Source: Sports Fishing Institute

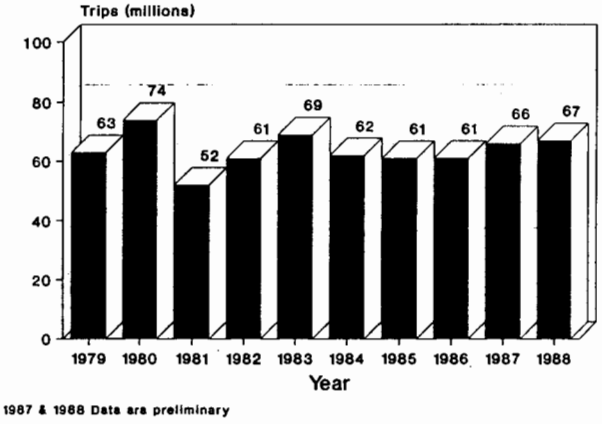

Figure 6.—Marine recreational fisheries trips from Atlantic and Gulf Coast states, 1979–88.

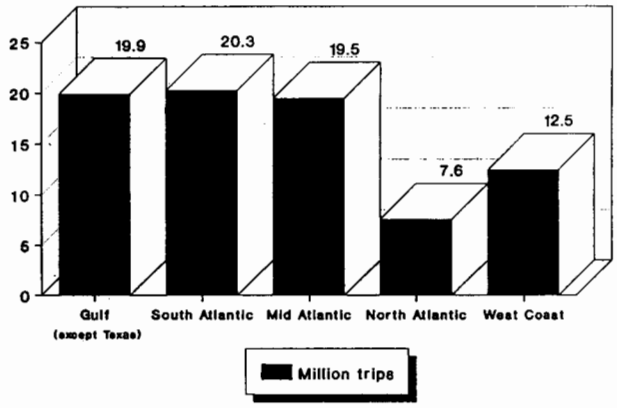

Figure 7.—Number of recreational fishing trips by coastal and non-coastal residents by region of the U.S., 1988.

A total of 321 million fish were caught on the Atlantic and Gulf Coasts in 1988 (Fig. 8); however, catches have gradually declined since 1979. In 1988, 130 million fish (Fig. 9) were caught in the Gulf. Even though this figure excludes Texas and all party boats, it represents 40 percent of the U.S. total. Thus, 25 percent of the recreational angling trips in the U.S. caught 40 percent of the fish, all in the Gulf of Mexico.

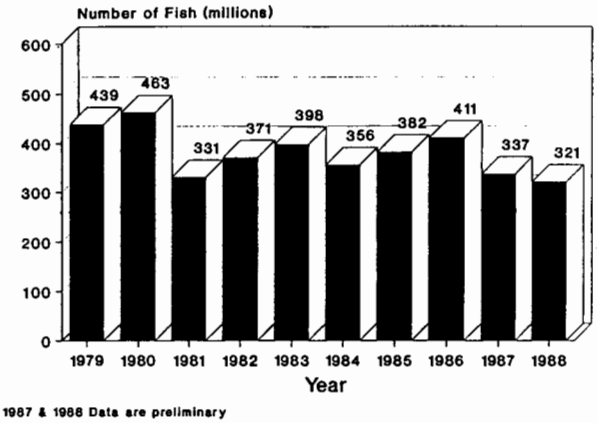

Figure 8.—Marine recreational fisheries catch from Atlantic and Gulf Coast states, 1979–88.

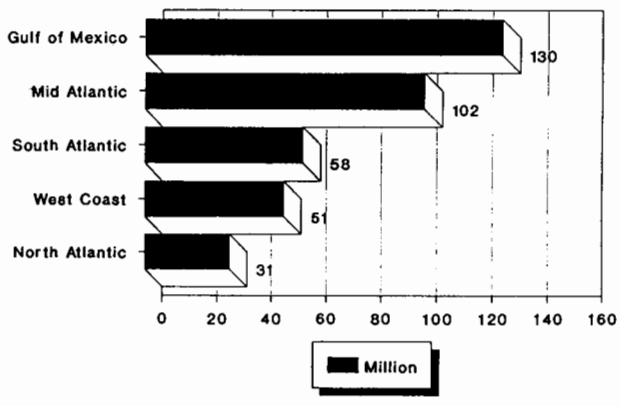

Figure 9.—Number of fish caught by marine recreational fishermen by region of the United States, 1988.

Seventy-four percent of all Gulf of Mexico sport anglers are coastal residents. Only 3 percent are non-coastal and 23 percent are non-resident. Fifty-five percent of the fishing occurs from private rental boats, 2 percent from party and charter boats, and 43 percent from shore. While party and charter boat fishing appear limited, it represents a small portion of a very large activity. Florida has 1,051 party and charter boats, more than all the other coastal states from Texas to North Carolina combined. Two-thirds of these Florida boats operate from Gulf ports. Based on sampling surveys, spotted sea trout was the most sought sport fish in the Gulf of Mexico in 1988.

Minerals and Petroleum

The infrastructure for oil and gas production in the Gulf of Mexico, the most developed in the world, includes oil refineries, petrochemical and gas processing plants, supply bases for offshore services, platform construction yards, pipeline yards, and

other industry-related installations. This infrastructure is highly concentrated in the coastal areas of Louisiana and eastern Texas, and to a lesser extent, along the southern half of the Texas Gulf Coast and east of Louisiana as far as Mobile, Alabama.[5] Recent lease sale controversies off Florida have drawn attention to the environmental and economic values of its Gulf coastal areas in uses other than oil and gas production and to the impact of oil and gas development on these resources. Central to this issue are the economic and national security benefits of offshore oil, gas, and mineral production. However, the social and environmental costs are borne largely by coastal states and their local communities. The magnitude of this economic issue is illustrated by the 1983 value of crude petroleum in the Gulf of Mexico ($42.3 billion (51 percent of U.S. total)) — and the value of natural gas ($29.7 billion (68 percent of U.S. total)). Again, Louisiana and Texas are the leading producers (Table 4).

Table 4.—The value of mineral fuels produced from the five Gulf Coast states, 1983.

	CRUDE PETROLEUM*	NATURAL GAS*
Florida	$ 380	$ 59
Alabama	564	254
Mississippi	842	612
Louisiana	14,397	15,380
Texas	26,494	13,363
TOTAL	$42,677	$29,688
PERCENT OF U.S. TOTAL	51	68

* Million dollars

Estimates indicate that 38 percent of the petroleum and 48 percent of natural gas reserves in the United States are in the Gulf of Mexico. However, the offshore oil and gas industry has experienced dramatic changes over recent years. Peaking in the early 1980s, the value of crude petroleum and natural gas production has declined sharply between 1984 and 1988 as a result of declines in wellhead prices of oil and gas (Fig. 10). Currently, the offshore sector has significant idle capacity of equipment and labor, which will continue until the wellhead price of oil and gas stabilizes at a higher level.

During 1986, the annual payroll associated with Gulf Coast oil and gas production was $1.7 billion, which generated almost $100 million in regional state and local taxes. During 1989, 72,000 jobs were related to offshore activity (a 42 percent decline since 1984).

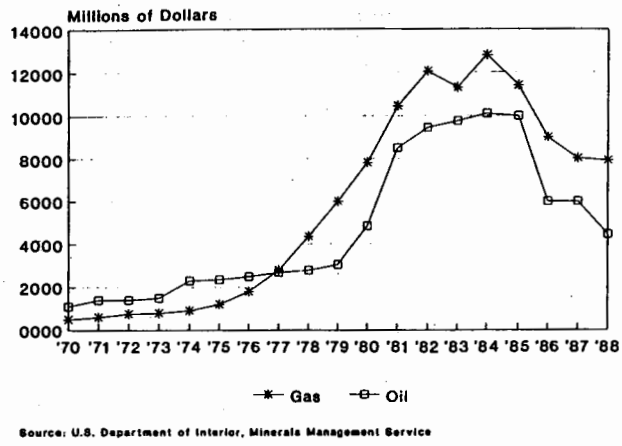

Figure 10.—OCS oil and gas production values offshore Louisiana and Texas, 1970–88.

Tourism

The Gulf of Mexico coast, one of the United States' major recreational regions, offers a diversity of both natural and developed landscapes and seascapes. Coastal beaches, barrier islands, estuarine bays and sounds, river deltas, and tidal marshes are extensively and intensively used for recreation by visitors from all over the world. An economic profile of recent tourist expenditures shows that about $20 billion is spent on Gulf of Mexico coastal tourism annually, creating $1.3 billion in taxes collected (Table 5).

Table 5.—Economic profile of annual tourist expenditures in the five Gulf Coast states in recent years.

	TRAVEL EXPENDITURES	TAXES COLLECTED
Texas (1987)	$5.3 billion	$ 304 million
Louisiana (1989)	3.2 billion	298 million
Mississippi (1987)	300 million	25 million
Alabama (1987)	1.1 billion	160 million
W. Coast Florida (1987)	10.4 billion	557 million

Shipping

Waterborne commerce existed in the Gulf of Mexico even before the first oil and gas structure. Extensive shipping patterns developed between the major Gulf ports and the Straits of Florida. A substantial amount of this activity does not use open Gulf waters but the Gulf intercoastal waterway, which follows the coastline inshore through bays

and estuaries from Ft. Myers, Florida, to Brownsville, Texas.

Maritime shipping is significant along the Mississippi River corridor into the Gulf of Mexico. Ninety-three percent of the total trips on the Mississippi River are from Baton Rouge to the Gulf of Mexico. Seventy percent of all United States waterborne commerce ton-miles of shipping and 60 percent of all petroleum and petroleum products waterborne transportation occur in the Gulf of Mexico. Recent increases in waterborne commerce transportation in the Gulf have been over twice the national average.

Coastal Pressures: A Florida Case Study

Development along the Gulf of Mexico's shoreline has been and will be intensive. The environmental costs — which are most often borne by the coastal communities and states — include fouling of beaches and other natural areas and concurrent adverse effects on fisheries and marine mammals, national parks, marine sanctuaries, and air quality: all aesthetic, recreational, and economic assets associated with the unique Gulf of Mexico coastline.

When varying uses such as fishing, housing, and oil exploration either expand or conflict, they impair the productivity of coastal systems and, in turn, curtail economic and other benefits to society. Adverse impacts on the natural resources could severely affect the economies of hundreds of communities.

The potential for impact from ever-increasing development can be seen from the economic values associated with case examples using Florida's coastal resources. Put simply, any decline in the quality and use of marine resources could have a large and adverse impact on the Gulf's economy. How many residents would not use these resources and how many tourists would not visit the Gulf of Mexico if coastal resource quality declined? Studies should be conducted on the demand for the Gulf of Mexico's coastal resources and how external forces affect it and, in turn, the Gulf's economy. As they are now used, the Gulf's coastal resources are still an economic asset. Using Florida examples, the following activities illustrate this statement.

Tourism

Between 1976 and 1987, tourism in Florida increased from 17.6 million to 35 million visitors, an average annual rate of increase of nearly 9 percent. In 1987, more than 26 million of 35 million tourists (75 percent) to Florida had one of its 35 coastal counties as their primary destination. The economy of Florida depends heavily on continued growth in tourism; beach use, fishing, and water sports were among the top 10 activities in 1987, when tourists spent nearly $12 billion in the coastal zone and were the source of almost 19 percent of the state sales tax collections from 35 coastal counties.[6]

Wetlands

Coastal wetlands are the nurseries for a large percentage of important fish species. Eighty-five to 95 percent of sport and commercially harvested fish in Florida depend on estuaries, so destruction of these wetlands would decrease the value of fishery landings by as much as 95 percent. Estimates[7] place the capitalized retail value per acre of marsh derived from providing habitat for both the commercial and recreational fisheries in Florida as high as $2,276 per acre on the state's west coast. These values are attributed only to their use as habitat for important fish and shellfish and should be considered minimum estimates because wetland values also result from other uses.

Recreational Fishing

In Florida, recreational fishing increased by over 300 percent between 1955 and 1979.[8] During one year in the early 1980s, a total of 5.2 million resident and tourist anglers fished for 58.6 million angler days (tourists were responsible for 72 percent of this activity). About $1.9 billion was spent directly by these anglers and $3.2 billion was indirectly generated. Recreational fishing supports 124,000 employees, who earned $1.4 billion in wages. Over $147 million in state taxes were generated by sport fishing expenditures.

Artificial Reefs

Florida has more artificial reefs than any other Gulf state. These structures have proven to be an important tool for fisheries management. A recent study of the Dade County reef system indicated that its economic value could range as high as $128 million.[9]

Boating and Marinas

Boat registrations in Florida increased 77 percent between 1975 and 1987. The annual percentage increase in boat registrations was three times greater than the population increase during that period. In

1987, 614,200 boats were registered, approximately one boat for every 20 residents or one for every eight Florida families. The recreational boating industry is also an important component of Florida's economy.[10] In 1985, 12 percent of U.S. retail sales of boats, outboard motors, boat trailers, and marine accessories occurred in Florida. The total industry — boat, trailer, and boat equipment manufacturing, marinas and boatyards, marine trades and service — created 23,200 jobs and $1.4 billion in economic output during 1985. Total economic impact from this direct activity was $2.7 billion, an 80 percent increase over 1980 estimates.

Beaches

Florida's 1350 miles of coastline contain almost 800 miles of open coast, high energy beaches. Beach-related activities are the most popular modes of outdoor recreation in Florida, with almost 80 percent of the annual tourists and 75 percent of residents participating. Over 5.2 million residents and 8 million tourists used Florida beaches in 1984,[11] with 146 million beach recreational days generating $4.6 billion in beach-related sales (or 2.8 percent of gross sales), creating 180,000 jobs and 4.1 percent of Florida's employment. These jobs generated an annual payroll of $1.1 billion or 2.3 percent of all wages and salaries in Florida. Beach-related business activity raised $164 million in tax revenues for Florida or 2.8 percent of total state sales tax collection.

Conclusions

Today's society tends to view more strongly the impact of changes in the environment on the local economy and community life. Societal and cultural factors are becoming important to the development impact assessment process. The effects of development on the existing economic base and of an influx of outsiders on traditional institutions and local residents' patterns of behavior are becoming more critical. The public has become highly interested in the role of coastal natural resources and how changes affect communities' economic base. In the future, economic and social issues will be even more important factors in regard to development and use of the natural resources associated with the Gulf of Mexico.

A major segment of the Gulf of Mexico's coastal economy is based upon the wise use of the natural resources offshore and along the coast. A large segment of the population resides along the coastal band between the uplands and the shore. Therefore, the Gulf's coastal waters are a focal point for the impacts and consequences of many upland, waterfront, and offshore activities.

The economic values associated with tourism, our wetlands, recreational fishing, artificial reefs, seafood production, boating, marinas, beaches, marine transportation, oil and gas production, and urban use add up to multi-billions of dollars — and these are minimum values, for we do not have value estimates associated with many other uses of coastal natural resources. Negative environmental impacts from growth and development translate to decreased demand for these resource uses and lost dollars to the tax base along the Gulf of Mexico. The decrease in demand for all these resources and the impact it would have on the Gulf of Mexico economy should be analyzed so that wise management decisions can be made on use of the coastal zone. The development of such a database and analysis must be the highest priority of the Gulf of Mexico program.

In addition, we need to know detailed local community infrastructure needs, the effect of space and resource use conflicts, the non-market values of oceanic and coastal resources, social and cultural values and others associated with local employment gains, increased tax revenues, and values derived from more development along the coast. Only then can we net these values out and determine the overall impact of environmental changes along the Gulf of Mexico on the future economy of this region.

From an economic and social science viewpoint, the Gulf of Mexico program should provide a mechanism to integrate economic and social values along with physical, biological, and environmental concerns in responding to the challenge of maintaining the productivity of the Gulf of Mexico.

End Notes

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Presented by the

Gulf of Mexico Program

December 2–5, 1990 • Clarion Hotel • New Orleans Louisiana

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